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(54) TWO-WAY COMMUNICATION EQUIPMENT UTILIZING TELEVISION BROADCAST

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain the two-way communication equipment using a television broadcast in which cross reference between reply data and a program is easily recognized in a data collection station when reply data comes from viewers of different teletext multiplex broadcast program by adding a specific program identification number to a data broadcast program.

SOLUTION: When a CPU 27 is in operation based on a computer program stored in a program RAM 42 and sent in a character multiplex broadcast signal form and reply data from a viewer such as a questionnaire are sent to a collection station through a MODEM 38a line connection section 39 and a telephone line 40. A transmitted program identification number is stored in the RAM 42 and when reply data are sent as incoming data the program identification

number added to the data is sent. Thus when reply data come from viewers of different character multiplex broadcast programs the data collection station easily recognizes a cross reference between the reply data and the program to improve the job efficiency of the data collection station.

CLAIMS

[Claim(s)]

[Claim 1] A two-way communication device using television broadcasting characterized by comprising the following.

A reception means which receives a data-broadcasting program which multiplex is carried out to a DCH which is contained in a television broadcasting signal and became independent of a video voice signal and is transmitted to it.

A demodulation means which restores to a computer program contained in said data-broadcasting program.

A communication control means for communicating with a distant office via a communication line.

A memory measure which memorized a peculiar identification number and an operation input processing means for incorporating a user's operational input based on said computer program to which it restored the above-mentioned communication control means as a memory measure and an operation input processing means are controlled. Have a program execution means to perform data processing and said program execution means. A means to add a program identification number peculiar to said data-broadcasting program and to build said transmission data when building transmission data by said communication control means in order to transmit a user transaction data which said operation input means incorporated to said distant office.

[Claim 2] A two-way communication device using the television broadcasting according to claim 1 wherein said peculiar program identification number which

said program execution means adds to said transmission data is the data added to a data-broadcasting program received by said reception means.

[Claim 3]data **** contained in said computer program by which said peculiar program identification number which said program execution means adds to said transmission data was received by said reception means -- a two-way communication device using the television broadcasting according to claim 1 characterized by things.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates data broadcasting broadcast by including in a television broadcasting signal to the two-way communication device using reception and the television broadcasting which is refreshableutilized this data broadcasting furtherand extended the function.

[0002]

[Description of the Prior Art]These daysthe teletext program which multiplexes and transmits a character and graphic data to the usual television broadcasting signal is realized. As a teletext program by which the present service is carried outnewsa weather reporttraffic informationsightseeing guidanceTV shoppingetc. occur. It isalso when giving a televiwer a questionnaire in a program.

[0003]By the waya present television broadcasting program and teletext are a method which provides a target with information from a television station on the other hand to a televiwer. Thereforewhen a shopping information program is broadcast by a teletext in the case of TV shoppinga televiwer takes to a memo the product number for which it wishes while looking at the character by which a screen display is carried outthe telephone number of a mail-order firmetc.and he will telephone using telephonelooking at the memo. Also when giving a

televiwer a questionnaire in a programthe response from a televiwer takes a telephone number etc. to a memoand it will be performed using telephonelooking at the memo. In such a caseproblemssuch as a wrong phone call at the time of the wrong phone call by an incorrect dial occurringor making a note of a telephone number accidentallyoccur.

[0004]

[Problem(s) to be Solved by the Invention]As described abovein the conventional teletext programone-sided broadcast from a television station is performedand since it is the method of waiting for the telephone communication from a televiwer about the responsea time limit for response becomes long. it obtainedwhen many wrong phone calls etc. were generatedand it had a problem.

[0005]Thenin order to solve such a problemin a teletext programcomputer program data is transmitted from the broadcasting station sideWhen a program execution means to execute this computer program is formed in a receiver and a televiwer gives an operational inputA program execution means performs dialing of telephone automatically via a communication control meansand the proposal that I will make it transmit a televiwer's input data automatically is performed. If it does in this waya wrong phone call will also decrease and the response time to a collection office will also become close to real time.

[0006]By the waythe response data (response about the order about the response about the response about a questionnaire and quiz and TV shopping) from a televiwer is transmitted to a collection office through a telephone line. In this systemwhen two or more teletext programs are performed simultaneously and it collects those response data in one data gathering stationthere is a case where distinction stops attaching whether it is response data of which teletext program.

[0007]The data transmission system is generally designed attach and transmit an identification number peculiar to a headerwhen transmitting self data. Howevera televiwer's anonymity will be lostwhen performing a questionnaireusing the above-mentioned teletext programand a peculiar identification number is

attached by automatic dialing and it transmits. Restriction will be given to the program content using a system when such a system is designed.

[0008]Soit aims at providing the two-way communication device which used the television broadcasting which the correspondence relation between response data and a program understood easily in the data gathering stationwhen there is response data from many televiwers who are viewing and listening to a different teletext program in this invention.

[0009]

[Means for Solving the Problem]A reception means which receives a data-broadcasting program which multiplex is carried out to a DCH which this invention is included in a television broadcasting signaland became independent of a video voice signaland is transmitted to itA demodulation means which restores to a computer program contained in said data-broadcasting programA communication control means for communicating with a distant office via a communication lineand a memory measure which memorized a peculiar identification numberBased on an operation input processing means for incorporating a user's operational inputand said computer program to which it restoredthe above-mentioned communication control meansa memory measureand an operation input processing means are controlledHave a program execution means to perform data processingand said program execution meansIn order to transmit a user transaction data which said operation input means incorporated to said distant officewhen building transmission data by said communication control meansa means to add a program identification number peculiar to said data-broadcasting programand to build said transmission data is included.

[0010]When there is response data from many televiwers who are viewing and listening to a different teletext program according to this meansin a data gathering stationcorrespondence relation between response data and a program is known easilyand data extraction of viewership etc. also becomes possible with improvement in working efficiency of a data gathering station.

[0011]

[Embodiment of the Invention]Hereafterthis embodiment of the invention is described with reference to drawings. The example of the system by which the two-way communication device using the television broadcasting which is this embodiment of the invention was applied is shown in drawing 1. By utilizing the present function and telephone communication function of teletextto the one way broadcast of television broadcastingthis system added the telephone communication functionextended the data transmission facility of the uphill directionand has realized the two-way communication function as the whole.

[0012]The overall system is constituted by the television receiver 11the broadcasting station 12the telephone network 13and the network including the collection office 14. The broadcasting station 12 is broadcast synchronizing with the usual television program using the channel of a teletext by making the computer program (script) for realizing bidirection into a data-broadcasting program. Or it is repeatedly broadcast in predetermined broadcasting hours as independent broadcast. this script is a kind of application program which described the advance procedure of the two-way communication systemand is superimposed during the vertical retrace line of a TV broadcast signal -- it is transmitted.

[0013]This script is performed by the program execution system (script decoder) which was stored in the memory of the television receiver 11 which received the TV broadcast signalfor examplewas built into that television receiver 11. This script decoder carries out a screen display of the emblem "i" which shows that the present program is a bidirectional broadcasting programnotifies a televiwer of itstarts script execution according to the operational input from a televiwerand answers presenting of program supplementary informationetc.

[0014]Although a response may be finished in self-sufficiency in the television receiver 11it is also possible to reflect real time in the program content which sends the result of a response to the computer systems (collection office 14) with which every place were equipped via the telephone network 13and the

broadcasting station 12 provides depending on the case.

[0015]This system is carrying out expansion of the existing teletext system by software. The response from a televiwer is sent to a collection office via a telephone network. Even if a script is added to teletext and it broadcasts it the present TV broadcast a teletext and a television receiver are not affected at all.

[0016]The television receiver 11 is equipped with a script decoder and a modem in order to realize a bidirectional function in addition to the usual TV broadcast receiving circuit containing a character multiplex decoder. A script decoder takes out a script out of the TV broadcast signal sent from the broadcasting station 12 and realizes two-way communication by performing it. In order to send uphill data when a televiwer answers it uses the remote control for TV operation. When data is transmitted to the collection office 14 an auto dial is performed and it is connected to the collection office 14 by the modem connected to the television receiver 11. After it may be transmitted immediately or uphill data waits for night etc. it can also be transmitted.

[0017]Since the modem added to the television receiver 11 has a function dialed automatically the dial control by a televiwer is unnecessary to an uphill data-communications sake. The telephone number of the auto-dial point is embedded and transmitted to the script from the broadcasting station 12 side for every bidirectional teletext program. This one telephone number has a case of the existing yes plurality and when it is plurality a televiwer can choose the destination.

[0018]A script decoder is realized by the processor which executes a computer program. However since the processor is usually built also in the character multiplex decoder a script decoder is realizable by carrying out expansion of the character multiplex decoder by software actually. Therefore a script decoder comprises a character multiplex decoder and a program ROM and is sharing many circuits with a character multiplex decoder.

[0019]When broadcasting the program of the televiwer participation method of making a televiwer's response reflect in a program etc. the broadcasting station

12 inserts a script in the broadcasting signal containing the usual image and sound and transmits to it. The program production system for reproduction of a script and insertion can consist of a personal computer and a multiplexing device.

[0020] The broadcasting station 12 broadcasts by inserting a script in a broadcasting electric-wave in the form added to the usual program. The computer program to add is divided roughly into what third parties such as what the broadcasting station itself makes an advertising agency and a mail-order firm make and provide. The thing of broadcasting station work has what can be prepared a priori and a thing live inserted like [at the time of a sport relay broadcast].

[0021] Here the composition of a script is explained. A script is created by the making system of the broadcasting station 12 and is sent out with the usual picture and sound. The script is realized as a set of the following objects.

[0022] (1) background and display raw material (2) operation-buttons (3) character string (4) picture etc. -- a complementary procedure (procedure) can be given to each object and this procedure is described by enhanced BASIC etc. This language gives usual BASIC the control instruction for two-way communication.

[0023] At the time of execution of this script screen constitution elements such as the background of a screen and operation buttons are displayed first. A televiewer's selection of the operation buttons will start the button compatible program.

[0024] The disposal method of response data is beforehand registered into the collection office 14 and the redistribution of the contents collected according to this can be carried out to a broadcasting station an advertising agency a sponsor a mail-order firm etc.

[0025] The gestalt of an interactive program realizable by this two-way communication system can be divided roughly into the following three.

(1) Carry out the selection display of the additional information about a supplement information program and a door buster.

[0026]- Display selectively the data at the time of a sport relay broadcast.

- Display a program content.
- Remember cooking Lisa Py and display later.

[0027]- React to the answer to a question in an early-childhood-education program.

- React to a televiwer's answer in a quiz show.

(2) Response feedback program (a collection office is used)

- Take politicseconomyand the questionnaire about a social report.

[0028]- Take a questionnaire by a sports program.

- Hold a correct answer person's statistics displayand a tournament by a televiwer participating quiz show.

(3) A program with a transaction (a collection office is used)

- Accept an order by a server (collection office) by TV shopping.

[0029]- Receive a catalog demand etc. in a server (collection office) by advertisements with a demandsuch as information.

- For an audience rating surveyacquire a televiwer's consent and send view program data to a server (collection office).

[0030]The concrete circuitry of the two-way communication device formed in the television receiver 11 and a script decoder is shown in drawing 2. The video signal of a receiving channel is supplied to the synchronizing separation part 22 and A/D converter 23 via the input terminal 21. Multiplex [of the data for bidirectional digital communications] is carried out to the vertical-retrace-line period of the video signal (drawing 3 explains these signal forms). Waveform equalization of the data digitized with A/D converter 23 is carried out by the waveform equalization section 24and it is introduced into data incorporation and the error correcting section 25. The waveform equalization section 24 compensates degradation in the middle of transmission of the video signal changed into the digital signalseparates the digital broadcasting signal by which multiplex is carried out to the video signaland outputs the multiplexing data and the clock in it. Data incorporation and the error correcting section 25 incorporate

multiplexing data into buffer RAM26 by 8 bitwises synchronizing with a clock and performs an error correction.

[0031]CPU27 operates on the basis of the fixed program of program ROM28.

The character font for performing a character representation is stored in character font ROM29 and alphabetic data corresponding by addressing the character of hope can be read to this ROM29.

[0032]The synchronized signal for a display in sync with a television receiver is introduced into the input terminal 30 and the display control part 31 is supplied. The display control part 31 synchronizes the data of the display memory 32 with reproduction of a television picture and reads it and it performs processing which writes an indicative data in the display memory 32 in response to the write instruction from CPU27. The data read from the display memory 32 is supplied to the color map memory 33 makes an indicative data an address input and outputs each level data of primary signal RGB corresponding to the address concerned. This level data is changed into an analog RGB signal with D/A converter 34 and is drawn from an output terminal as a status signal. This status signal is displayed on a display as a television picture signal which it was compounded with the television picture signal by the synthesizing means which is not illustrated and graphics superimposed.

[0033]From the input terminal 36 the manipulate signal by the televiwer from a remote control operating section is inputted. Via the operational input interface (I/F) 37 this manipulate signal is incorporated into CPU27 and analyzed.

[0034]38 is abnormal conditions and a demodulator (modem) constitutes the communication control part and is connected to the telephone line 40 via the line connection part 39. The line connection part 39 controls connection of a circuit and cutting and is controlled by CPU27.

[0035]CPU27 is connected to each functional block 25 i.e. data incorporation and error correcting section and program ROM28 character font ROM29 operational input I/F 37 the display control part 31 the modem 38 etc. via the bus line.

Furthermore work RAM41 program RAM42 and the nonvolatile memory 43 are

connected to the bus line. Program RAM42 is a memory which stores the computer program transmitted from a broadcasting station. According to a televiewer's operation the contents of this computer program can be interpreted according to the interpreter in the fixed program stored in ROM28 and the procedure of this computer program can be performed. When the identification number (ID) peculiar to this receiving terminal (decoder) is stored in the nonvolatile memory 43 for example order data is transmitted to the collection office 14 by TV shopping etc. this peculiar identification number is used. In the collection office 14 the order Lord will be distinguished by ** which recognizes ID.

[0036] The period when teletext data is transmitted in TV teletext signal of a hybrid transmission system is shown in (A) of drawing 3 and (B), namely teletext data -- the [of a vertical-retrace-line period] -- the [14H (the 277H) -] -- the [16H (the 279H) and] -- 21H (the 284H) is overlapped. since there is a margin in which multiplex is possible in this vertical-retrace-line period about data further -- the -- the [10H (the 273H) -] -- multiplex [of the script mentioned above to 13H (the 276H)] can be carried out and it can be transmitted. Although it may carry out multiplex [of the script] to a different position in this way from the present character multiplex position it may be transmitted to the same position as the present character multiple signal by time sharing. Teletext data can be put on one sub channel of a voice multiple signal it can also transmit and the data from an FM reception part will be incorporated in this case.

[0037] Drawing 4 shows the system action in case the response feedback program (a collection office is used) is broadcast. The supplement information relevant to the full-service-broadcasting program of the televiewer participatory type in an auto-feed back program. (For example a selector in case a televiewer is asked and a televiewer chooses a reply to a question according to the program and the program identification number in which the full-service-broadcasting program is still more peculiar) are provided and the response indication is reflected in a program content because a televiewer answers through a selector. A quiz show and a questionnaire occur as an example of representation of an

auto-feed back program. For example the questionnaire about politics/economy/a social report/sick career/etc. may be taken.

[0038] In the state where the full-service-broadcasting screen of the program of a questionnaire is flowing/reception of a script will carry out a screen display of the emblem "i" (interactive mark) which shows that it is a bidirectional data communication program (Step S10S11).

[0039] If the emblem "i" is chosen when a televiwer operates a remote control (Step S12) CPU27 will start execution of processing operation based on the computer program stored in program RAM42. First selection of whether to make the reply to a question into anonymity is required (Step S13). It is made to realize by making it display on a screen through the display control part 31 and this leaves the character representation data currently sent beforehand to judgment and selection of a televiwer or it is automatically chosen by the program and it is realized. When a televiwer considers it as yes (restraining order issue of ID transmission) through a remote-control-operation input in the case of the former and data is formatted by the non-communication control part of the modem 38 the form 1 (refer to drawing 5 (a)) in which the user's peculiar identification number was deleted is chosen (Step S14). In the case of no the form 2 (refer to drawing 5 (b)) is chosen (step S14') and ID of the ID register which is read from the nonvolatile memory 43 and set up is added. Next in an acting-before-the-audience group a question etc. are performed and the selector of a reply to it is displayed (Step S15). In [if a selector is chosen by operation of a remote control by a televiwer (Step S16)] a communication control part Data formatting (Step S17) is performed automatic dialing is performed using the telephone number beforehand transmitted in the script and the predetermined send data containing a selector is transmitted to the collection office 14 and is further sent to the broadcasting station 12 from here (Step S18). In this case in the collection office 14 the data of a selector is totaled and that totaled result is sent to the broadcasting station 12 and is reflected in a program content.

[0040] The program identification number of the program concerned is added and

transmitted to the going-up data sent to the collection office 14 here with a televiwer's reply and questionnaire data. This program identification number is beforehand transmitted along with the program as supplement information and this program identification number is stored in program RAM42 with a script for example. And when a televiwer transmits response data this program identification number is read from program RAM42 and goes up in data formatting processing of a transmission control function and it is added to data.

[0041] If it does in this way when incorporating the data from many televiwers one after another and arranging it the program corresponding to response data can be identified and when performing correct answer decision processing processing of a reply and distribution of order data working efficiency can be raised in the data gathering station 14.

[0042] Although the televiwer itself determined in the embodiment whether transmit a peculiar identification number (ID) it specifies in the script beforehand and it is also possible to regulate a system so that ID may not be transmitted. In this case the restraining order of ID transmission is added to the script.

[0043] A broadcasting station or a sponsor performs a questionnaire and when supposing that anonymity may be used the data collection point moreover there are contents which pose a problem of a televiwer's privacy. For example they are the clinical recording health condition etc. In such a case it is more effective to make the telephone number for previous automatic dialing into a collect call (system which the partner point pays).

[0044] The example of the format of uphill data is shown in drawing 5. As a data format which goes up from a communication control part and is transmitted as data various kinds of embodiments are possible. Drawing 5 (a) is the order of a header unit the program ID part the user-datum part and the error correction code part in the case of anonymity it is a use **** thing and there is no ID part. Drawing 5 (b) is the order of a header unit an ID part the program ID part the user-datum part and the error correction code part. When going up anonymously and transmitting data an ID part is deleted and discernment of the form 1 or the form 2

is distinguished by the header unit. For example in the case of the form 1 in the case of 1 and the form 2 the header of a header is 2. Therefore automatic dialing is performed and when it is recognized that the received response occurred from the collection office 14 data as shown in drawing 5 will be transmitted.

[0045] Form of the forms 1 and 2 is not adopted but uphill data is used only as the form 2 and in the case of anonymity an ID part is transposed to all zero and it may be made to transmit it. By having a transmitting function of such going-up data discernment from response data a corresponding teletext program or response data and a corresponding channel becomes easy in a data gathering station. As a result since it can classify according to a program identification number for example even if response data is the same contents confusion of data is not caused. Also on employment the questionnaire etc. from which the contents differ can be realized in several channels which are different in the same time zone respectively or several different teletext programs and the same collection office 14 can respond now to the data collection. The data gathering station's 14 not processing the response data based on one teletext program in this way but the response data based on several different channels or several different teletext programs being processed is that efficient employment of a system is possible.

[0046]

[Effect of the Invention] As explained above when there is response data from many televiewers who are viewing and listening to a different teletext program according to this invention in a data gathering station the correspondence relation between response data and a program (or channel) can be known easily and the efficiency of data reduction can be improved.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The figure showing the example of the system by which the two-way communication device using the television broadcasting of this invention was applied.

[Drawing 2]The figure showing an example of the embodiment using the television broadcasting of this invention of a two-way communication device.

[Drawing 3]A teletext signal and a data-broadcasting signal-description figure.

[Drawing 4]The flow chart shown in order to explain the example of the device of this invention of operation.

[Drawing 5]The figure showing the example of the transmission format of uphill data.

[Description of Notations]

11 [-- Collection office] -- A television receiver12 -- A broadcasting station13 -- A telephone network14 22 [-- Data incorporation and an error correcting section] -- A synchronizing separation part23 -- An A/D converter24 -- A waveform equalization section25 26 [-- Character font ROM] -- Buffer RAM27 -- CPU28 -- Program ROM29 31 [-- A D/A converter37 / -- Operational input I/F38 / -- A modem39 / -- A line connection part41 / -- Work RAM42 / -- Program RAM43 / -- Nonvolatile memory] -- A display control part32 -- Display memory33 -- A color map memory34
